Mr. Richard J Payonk
Wabash River Energy Ltd.
444 West Sandford Avenue
West Terre Haute, IN 47885

Re: 167-12145
Second Administrative Amendment to
Part 70 167-7353-00091

Dear Mr. Payonk:

Wabash River Energy Ltd was issued a permit on December 31, 1998 for a stationary coal gasification system rated at 367,000 pounds of syngas produced per hour including gasification, high and low temperature heat recovery, sour waste treatment, oxygen unit, and a flare. A letter requesting the use of petroleum coke as an alternate fuel was received on March 29, 2000. Pursuant to the provisions of 2-7-11 the permit is hereby administratively amended as follows:

Wabash River Energy, Ltd. request the addition of petroleum coke as an alternate fuel. Due to the cost of processing and transporting coal, it is no longer economical for them to operate on coal alone. Wabash River Energy, Ltd. will remain in operation with the addition of the alternate fuel.

All other conditions of the permit shall remain unchanged and in effect. Please attach a copy of this amendment and the following revised permit pages to the front of the original permit.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Mr. Darren Woodward, at (812) 462-3433, extension 15.

Sincerely,

George M. Needham
Director
Vigo County Air Pollution Control

Attachments
DKW
cc: Mindy Hahn - IDEM
Winter Bottum - IDEM

PART 70 OPERATING PERMIT

OFFICE OF AIR MANAGEMENT
and
VIGO COUNTY AIR POLLUTION CONTROL

Wabash River Energy Ltd.
444 West Sandford Avenue
Terre Haute, Indiana 47885

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Operation Permit No.: T167-7353-00091	
Issued by: Janet G. McCabe, Assistant Commissioner Office of Air Management	Issuance Date: December 31, 1998
First Administrative Amendment 167-11851	Issuance Date: March 1, 2000
Second Administrative Amendment 167-12145	Page(s) Affected: Page 5
Issued by: George M. Needham, Director Vigo County Air Pollution Control	Issuance Date: August 31, 2000

SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) and Vigo County Air Pollution Control (VCAPC). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

The Permittee owns and operates a stationary ~~coal~~ gasification system **with the capabilities of operating on coal, petroleum coke, or a blend of coal and petroleum coke. The system is** rated at 367,000 pounds of syngas produced per hour including gasification, high and low temperature heat recovery, sour waste treatment, oxygen unit, and a flare.

Responsible Official:	Richard J Payonk, Director of Operations
Source Address:	444 West Sandford Avenue, West Terre Haute, Indiana 47885
Mailing Address:	444 West Sandford Avenue, West Terre Haute, Indiana 47885
SIC Code:	2869
County Location:	Vigo
County Status:	Attainment for all criteria pollutants
Source Status:	Part 70 Permit Program Major Source, under PSD or Emission Offset Rules;

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

1. An acid gas removal/sulfur recovery unit, identified as unit 1A, using incineration as control, and exhausting to stack EP-1.

2. A sour water treatment system, identified as unit 1B, using incineration as control, and exhausting to stack EP-1.

3. A tank venting system, identified as unit 1C, using incineration as control, and exhausting to stack EP-1.

4. A tail gas incinerator (manufactured by L.D. Duiker, model number XIV), identified as unit 1, with a maximum heat input capacity of 52 million BTU per hour, which controls emissions from units 1A, 1B, and 1C, and exhausting to stack EP-1.

5. A flare, identified as Unit 2, with a maximum pilot rate of 1.6 million BTU per hour, and exhausting to stack EP-2.

6. Fugitive equipment leak emissions.

A.3 Specifically Regulated Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

This stationary source does not currently have any insignificant activities, as defined in 326 IAC 2-7-1 (21) that have applicable requirements.

Indiana Department of Environmental Management
Office of Air Management
and
Vigo county Air Pollution Control

Technical Support Document (TSD) for a for an Administrative Amendment to a Part 70 Operating Permit

Source Background and Description

Source Name:	**Wabash River Energy, Ltd.**
Source Location:	**444 West Sandford Avenue, West Terre Haute, IN 47885**
County:	**Vigo**
SIC Code:	**2869**
Operation Permit No.:	**T167-7353-00091**
Operation Permit Issuance Date:	**December 31, 1998**
Administrative Amendment No.:	**AA 167-12145-00091**
Permit Reviewer:	**Darren Woodward**

Vigo County Air Pollution Control (VCAPC) has reviewed an Administrative Amendment application from Wabash River Energy, Ltd. relating to the operation of a stationary gasification system with the capabilities of operating on coal, petroleum coke, or a blend of coal and petroleum coke. The system is rated at 367,000 pounds of syngas produced per hour including gasification, high and low temperature heat recovery, sour waste treatment, oxygen unit, and a flare.

History

On March 29, 2000, Wabash River Energy, Ltd. submitted an application to the VCAPC requesting to add petroleum coke as an alternate fuel to their existing plant. Wabash River Energy, Ltd. was issued a Part 70 permit on December 31, 1998. Wabash River Energy, Ltd. supplied stack test data demonstrating that there would not be an increase in emissions when using petroleum coke, or a blend of petroleum coke and coal, compared to coal only. They will be significantly below their Part 70 permit limitations when using coal, petroleum coke, or a blend of both. A more detailed explanation of equipment, operations, emissions, etc., can be found at the end of this TSD in Appendix #1 and Appendix #2.

Source Definition

This power plant consists of a source with an on-site contractor:

(a) Cinergy - Wabash River, the primary operation, is located at 450 Bolton Road, West Terre Haute, Indiana; and

(b) Wabash River Energy, Ltd., the supporting operation, is located at 444 West Sandford Road, West Terre Haute, Indiana.

IDEM and VCAPC has determined that Plant 1, Cinergy - Wabash river, and Plant 2, Wabash River Energy, Ltd. are under the common control of Cinergy - Wabash River. These two plants are considered one source due to contractural control. Therefore, the term “source” in the Part 70 documents refers to both Cinergy - Wabash River and Wabash River Energy, Ltd. as one source. Separate Part 70 permits were issued to Cinergy - Wabash River and Wabash River Energy, Ltd. solely for administrative purposes.

Existing Approvals

Wabash River Energy, Ltd. was issued a Part 70 Operating Permit (T167-7353-00091) on December 31, 1998. Wabash River Energy, Ltd. has since received the following:

(a) First Administrative Amendment No.: 167-11851, issued on March 1, 2000.

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the Administrative Amendment be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on March 29, 2000. Additional information was last received on May 23, 2000. Wabash River Energy, Ltd. waived the time clock accountability due to the complex issues concerning petroleum coke.

Emission Calculations

The calculations (stack test data) submitted by the applicant have been verified and found to be accurate and correct. The data is provided in Appendix A of this document, pages 1 through 14.

Potential To Emit

The potential emissions from the addition of petroleum coke, or a blend of petroleum coke and coal, as an alternate fuel will be equal to or less than the potential emissions when using coal only.

County Attainment Status

The source is located in Vigo County.

Pollutant	Status
PM-10	Attainment
SO_2	Maintenance
NO_2	Attainment
Ozone	Attainment
CO	Attainment
Lead	Attainment

(a) Volatile organic compounds (VOC) and oxides of nitrogen (NOx) are precursors for the formation of ozone. Therefore, VOC and NO_X emissions are considered when evaluating the rule applicability relating to the ozone standards. Vigo County has been designated as attainment or unclassifiable for ozone.

Federal Rule Applicability

Prevention of Significant Deterioration (PSD) and Emission Offset

The original construction was subject to Prevention of Significant Deterioration. Therefore, BACT was required for both CO and H_2SO_4 emission points. This modification will be covered under the original BACT requirements. This modification does not contain any new BACT requirements.

State Rule Applicability

326 IAC 2-7-11 (Administrative permit amendments)

Pursuant to 326 IAC 2-7-11, the addition is considered an administrative permit amendment because the revision does the following:

(6) Incorporates into a Part 70 permit a general permit issued under section 13 of this rule; and
(8) Revises descriptive information where the revision will not trigger a new applicable requirement or violate a permit term

The addition of petroleum coke, or a petroleum coke and coal blend, as an alternate fuel will not change the state rule(s) applicability. Therefore, state rule(s) applicable to Part 70 Permit 167-7353-00091 will remain applicable.

Compliance Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAM and VCAPC, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in permit Section D are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also in permit Section D. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 188 hazardous air pollutants (HAPs) set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Part 70 Application Form GSD-08.

(a) This source, including this modification, will emit levels of air toxics less than those which constitute a major source according to Section 112 of the 1990 Clean Air Act Amendments.

Conclusion

This stationary gasification system has the capabilities of operating on coal, petroleum coke, or a blend of coal and petroleum coke. The system, rated at 367,000 pounds of syngas produced per hour including gasification, high and low temperature heat recovery, sour waste treatment, oxygen unit, and a flare, shall be subject to the conditions of the attached proposed Administrative Amendment 167-12145-00091.

Background Appendix #1

Background Information for Wabash River Energy PET Coke Project

General Background:

Wabash River Energy currently processes coal to produce a sweet syngas that is sold to Cinergy - Wabash River Generating Station and burned in a Combustion Turbine to generate electricity. This project was a joint venture between the company now called Wabash River Energy and PSI Energy. A description provided by Wabash River Energy contained the following: *"The project is designed to demonstrate a two stage, oxygen blown, entrained flow CGCC technology under the guidelines of the Department of Energy's (DOE) Clean Coal Technology (CCT) IV program. The expected life of the project is 25 years. As part of the joint venture agreement, PSI owns and operates the coal handling facilities, combined cycle power unit, and certain support facilities. Gasification Services, Inc. (GSI), a Destec subsidiary, owns and operates the gasification plant and the air separation unit (ASU)."*

The original Construction Permit was issued in 2 parts on May 27, 1993. The first part (167-2609) was issued to Wabash River Energy (Under the name Gasification Services, Inc.) and contained all the provisions relating to the syngas production. The second part (167-2610) was issued to PSI Energy, Inc. - Wabash River Generating Station (PSI and Cincinnati later merged to form Cinergy, but they still own the name PSI Energy and do some work under that name) and contained all the electric generating equipment and the coal and slag handling systems. These permits were issued at a time when Vigo County was still considered nonattainment for SO_2. A large part of the reason the permits were issued at all was the removal of one of the Units from PSI's existing generating station which provided a large actual emission reduction. As a result the permits were only reviewed with regard to PSD for CO and H_2SO_4 mist. In order to use those reductions, a condition was placed on Wabash River Energy that any syngas produced in this process has to be sold to PSI Energy, Inc.

Here is a description of how the syngas production works:

- The coal is made into a slurry by crushing it in a wet rod mill.

- They utilize an Air Separation Unit (ASU) which is composed of an air compression system, an air purification and cryogenic distillation system, an oxygen compression system and a nitrogen storage and handling system. The ASU is utilized to take ambient air and split it into 95% pure oxygen (dry) and liquid nitrogen.

- The gasification system itself consists of 2 stages. The first stage is where the coal slurry and oxygen are combined in partial combustion quantities (at about 2500 F and 400 psia). The temperature is carefully controlled to keep it above the ash fusion point, which ensures good slag removal. The resulting products from this stage are primarily hydrogen, carbon dioxide, carbon monoxide and water vapor. Any sulfur in the coal is converted primarily to hydrogen sulfide (H_2S) with a portion converted to carbonyl sulfide (COS). The second stage takes this hot syngas from the first stage and reacts it with more coal slurry. This reduces the temperature a little (1900 F) and creates additional gas at a higher heating value.

- The gas stream exiting the second stage of the gasification system is passed through a firetube heat recovery boiler system which produces saturated high pressure steam. The steam is utilized in power generation. The gas then passes through a barrier filter to remove particulate. The particulate is recycled back into the first stage of the gasifier.

- The carbonyl sulfide (COS) has to be converted before the Acid Gas Removal (AGR) system because it is not removed as efficiently. This is accomplished using a conversion system. In this system the COS is catalytically converted to hydrogen sulfide (H_2S).

- In the AGR system the H_2S in the "sour" syngas is selectively removed in an absorber that utilizes methyl diethanol amine (MDEA) as the solvent. The "sweet" syngas stream (because the sulfur has been substantially reduced) is then processed to meet the combustion turbine's input specifications. Those include moisture content and temperature. The H_2S laden solvent stream is processed in a reboiled stripper that generates a concentrated H_2S steam and a lean amine stream that is recycled back to the absorber.

- The concentrated H_2S stream (along with gasses from a few other streams) are treated in the Sulfur Recovery Unit (SRU). In the SRU the H_2S is stripped out using catalytic reactions and converted to elemental sulfur. The elemental sulfur is sold as a by-product.

- On the gasification side of the operation there are a few other processes that should be mentioned. The tail gas incinerator handles whatever amount of tail gas from the sulfur recovery system that can not be reconditioned and recycled back to the gasifier. It also handles the gas streams from tank vents and air purge streams. The sour water treatment system removes dissolved gases from the various water utilizing processes and sends the gas stream on to the SRU. Most of the water is recycled and utilized again in the operation. The flare is utilized to minimize emissions from the syngas. During normal production the only gas vented to the flare is the natural gas fired pilot and purge gas streams. If the combustion turbine is for some reason unable to accept syngas then some product may be sent to the flare as well. The cooling tower is utilized to control water temperatures used throughout the plant.

- Cinergy utilizes the sweet syngas in a combined cycle combustion turbine (CT). Exhaust gas from the CT are used to produce steam in the heat recovery steam generator (HRSG). This steam, along with steam from the syngas cooler, is used to repower the Unit 1 steam turbine.

This project commenced operation on November 30th, 1995. However, since that time it has never run for an extended period of time. The problems with operation have been on both the syngas production side and the power generation side. It is important to remember that both sides of the operation have to be able to operate for the equipment under Wabash River Energy's control to be utilized.

Sometime since the project was brought into operation PSI Energy bought out the remainder of the contract with the gasification plant. Now the plant is not ensured of being able to sell the syngas unless they can become cost competitive not with coal, but with natural gas prices. This allowed PSI Energy to apply for (and receive) approval to switch the CT over to natural gas operation. It has also caused Wabash River Energy to very aggressively search for ways to reduce the cost of producing syngas.

Operating Permit Status:

Both companies submitted separate Part 70 applications for their respective equipment. The Cinergy permit has not yet been issued pending resolution of more of the issues that are common to all the electric utilities. That Part 70 permit will include all of this equipment in addition to 5 other coal-fired utility boilers and various supporting operations. The gasification side has already been issued a Part 70 permit [167-7353-00091] on December 31, 1998. This issued Part 70 permit contained the following Source Definition section in the TSD:

This power plant with gasification operations consists of a source with an on-site contractor:

(1) Plant 1, Cinergy - Wabash River, the primary operation, is located at 450 Bolton Road, West Terre Haute, Indiana; and

(2) Plant 2, Gasification Services, the supporting operation, is located at 444 West Sandford Road, West Terre Haute, Indiana.

IDEM and VCAPC has determined that Plant 1, Cinergy - Wabash River, and Plant 2, Gasification Services are under the common control of Cinergy - Wabash River. These two plants are considered one source due to contractural control. Therefore, the term "source" in the Part 70 documents refers to both Cinergy - Wabash River and Gasification Services as one source.

Separate Part 70 permits will be issued to Cinergy - Wabash River and Gasification Services solely for administrative purposes.

Since the Part 70 Permit was issued there has only been one Administrative Amendment issued [167-11851-00091]. It was for the ownership change that changed the name to Wabash River Energy. They have also received approval to conduct experimental trials utilizing PET Coke as the raw material instead of coal.

On the power generation side there has been one modification of note recently. On August 24, 1999, PSI Energy, Inc. applied for a modification to allow them to burn natural gas in the combustion turbine. In order to operate the turbine without the gasification plant in operation they also needed to be able to replace all the steam that currently comes from that process. So the application also included a 397.8 million BTU per hour natural gas fired boiler. The final part of the application was for approval to operate the turbine in simple cycle mode sometimes instead of only in combined cycle mode. Along the way an interim approval was issued by IDEM and the Significant Source Modification was issued by VCAPC on January 27, 2000 [167-11328-00021]. This approval was not major for the purposes of a PSD review. It was a synthetic minor through both netting and limitations. However, the applicability determination relating to PSD on this approval may impact the current discussion. The following statement was included in the TSD Appendix (on Page 5 of 6): *"The source has asked that for the old equipment (Combustion Turbine) the allowable emission rates be used for the netting calculation, instead of the past actual emissions. This is supported by the fact that the project is a DOE demonstration project and is not proven technology. They simply have not operated up to capacity for any extended period of time and there is no 2 year period where actual emissions would be representative of normal operation."* This petition was agreed to by both IDEM and VCAPC and that methodology was utilized in the processing of the modification. This is significant because during the 6 or so months since that determination there still has not been enough operational time to show "normal" operations over a 2 year period.

Current Permit Review:

The approval currently being reviewed would allow Wabash River Energy to utilize PET Coke as a raw material in place of coal. The main reason they would like to do this is economics. Right now the gasification technology is simply not cost competitive with natural gas. PET Coke could be a lower cost raw material which would work well in the gasification system.

There are several questions which must be considered in order to process this application. The ones that this department considers to be critical are the following.

1. What data should be used for the past emissions levels during the net emissions increase calculations?

2. What is the direct effect on emission rates from the Wabash River Energy plant when the raw material is switched to PET Coke?

3. Are there any indirect emission rate changes from the PSI Energy equipment as a result of the raw material change?

Obviously the answers to these 3 questions could result in a whole slew of other questions and concerns, but too many "what ifs" or "if thens" at this stage would only further muck up the situation. This office has some fairly strong opinions about all three of these issues. They are presented below.

First the determination of the past emissions data to use in the calculation must be accomplished. Normally this would be the default of "past actual" emissions, but in this case past allowable may be more appropriate. The basis for that would be a lack of 2 years of representative emission data. This option is supported under 326 IAC 2-2-1(b)(2) which states that *"The department may presume that source-specific allowable emissions for the unit are equivalent to the actual emissions of the unit."* Also, 326 IAC 2-2-1(b)(3) states *"For any emissions unit which has not yet begun normal operations on the particular date, actual emissions shall equal the potential to emit of the unit on that date."* Because of the experimental nature of the project, in conjunction with some other unexpected problems, the gasifier has only operated in short stretches, which is not the intended use for the process. There is emissions data, but not 2 years worth to satisfy the normal procedure. This would seem to support the position of using the PTE or allowable emission rates for the past number. Additionally, since this operation is very clearly tied to the operation of the PSI Energy combustion turbine, and for Part 70 purposes they are considered one source then the previous determination for PSI Energy that the operation had not yet reached "normal" operation would be another fact in support of this assertion.

Second the effect on PTE from the fuel switch must be determined. Wabash River Energy provided summaries of a few stack tests to show the effect on emissions. The main pollutant which seems to be under consideration is SO_2. The SO_2 emission rate from the stack test on coal was 14.64 pounds per hour. The SO_2 emission rate from the stack test on PET Coke was 31.58 pounds per hour. This appears to indicate that the SO_2 would increase, but that is not all the data available so a decision should not yet be made. The allowable SO_2 emission rate is 527 pounds per hour, so even though the coal had lower results the operation was well within its allowable emissions rate in either case. The coal rate was 2.78% of allowable and the PET Coke rate was 5.99% of the allowable, so clearly the system was working very well during both tests, if marginally better during the coal test. Another factor that needs to be discussed is how much weight do you place on a single test? Clearly an average of three one-hour samples is important, but not so much that we would be expected to go back and automatically redo all the PTE calculations. Wabash River Energy has also provided hour by hour SO_2 emission rate information from January 1, 1996 through December 31, 1999. Now there are a large number of these hours that are marked off as DOWN, but there are enough days to see that the day the stack test was run on PET Coke is not higher than all the days on coal. In fact (without actually doing a statistical analysis) the PET Coke runs appear to be fairly normal as far as SO_2 emission rates. This office is of the opinion that these 2 main points (how much below the allowable both tests were and the review of CEM data) indicate that there will not be an increase in SO_2 emissions from the use of PET Coke as the raw material instead of coal.

Third the effect on combustion turbine emissions must be analyzed. The following table reiterates data which was in the draft final report to the DOE from Wabash River Energy. It covers the syngas composition relative to the raw material used to make it.

Component	Typical Coal	Petroleum Coke
Nitrogen, (N_2), Vol%	1.9	1.9
Argon (Ar), Vol%	0.6	0.6
Carbon Dioxide (CO_2), Vol%	15.8	15.4
Carbon Monoxide (CO), Vol%	45.3	48.6
Hydrogen (H_2), Vol%	34.4	33.2
Methane (CH_4), Vol%	1.9	0.5
Total Sulfur, ppmv	68	69
Higher Heating Value, (HHV) BTU/scf	277	268

This shows that the resulting syngas has very much the same composition as the typical coal based syngas. That would be a strong indication that the emission rates from the combustion turbine would not be affected by the raw material conversion.

SUMMARY

In summary VCAPC would like to state that we feel the following with regard to this application:

- The most appropriate number to use for past emissions is the PTE because normal operation has not yet been reached.
- There would be no increase above the past allowable (PTE) because of the addition of PET Coke as an allowed raw material.
- There would not be any collateral increases in combustion turbine emissions due to the additional raw material.
- Therefore, the application would be able to be processed as an administrative amendment like the draft that was already send over for IDEM review. Most likely with the addition of much of the background and reasoning provided in this document.

Background Appendix #2

Background Information for Wabash River Energy PET Coke Project

The main issue of contention is the determination of what numbers to use for past emissions. The baseline has not been set and therefore, pursuant to the definitions found in 326 IAC 2-2-1(b)(3), the past actual emissions would be estimated by the potential to emit for the operation. This determination would be consistent with the one made for a modification on the Cinergy side of the same operation in a Significant Source Modification that was issued on January 27, 2000 (167-11328-00021). This can also be substantiated by looking at production records which are already available. The total annual production of Syngas per year from 1996 to 1999 in MMBTU increased from just under 2500000 MMBTU for 1996 to about 6000000 MMBTU for 1997 and topped out at about 8000000 MMBTU for 1998. In 1999 there was a failure within the Combustion Turbine (on the Cinergy side) that brought the whole system down for a significant period of time. That is why the 1999 production drops down to just over 5000000 MMBTU. The Combustion Turbine failure occurred early in March of 1999 and the plant was not brought back on line until sometime in June of the same year. The production levels reached in September of 1999 represent the highest monthly syngas production the plant has ever attained.

From this information the following conclusions can be reached: first, this operation is an emerging technology, it is not something that has previously been proven to work on the scale of this plant. The continual growth in production from 1996 through 1998, combined with the fact that they set a production record in September of 1999 (just 3 months after coming back online following the Combustion Turbine failure) indicates two things. They have in fact been diligently working to make the process reliable. And, they also have proven that the technology can work on this scale. This further supports our contention that the addition of PET Coke as an additional raw material is based on economic reasons, not because the project was a failure in any way before. The second conclusion was that the baseline should not be considered to be set yet for this operation. Looking at the definition of Actual Emission in the PSD requirements it wants the average rate at which the unit actually emitted during a two year period prior to the application. But it goes further to say that the emissions should be representative of normal source operation. While there is emission data for more than a two year period, there is not that much time available that represents normal operation. This is supported by the continued increase in production from the time it was first operated and the relatively recent production record To us this is the perfect example of the situation that results in using the unit's potential to emit for the "past actual"part of the net emission change determination.

After the determination of the appropriate "past" emission level the next logical step is to determine the effect PET Coke has on emissions from the plant's operation. There will not be any increase in potential emissions (from the past potential) as a result of this modification. At a glance, the stack test data that had initially been supplied to IDEM as background did not support a decrease in emissions. Very often stack test data from a particular operation would be the best available information on how that operation works. Clearly having site specific data would be preferable to some industry wide emission factor. It might even be better than some data provided by manufacturer's since it represents 1 piece of equipment instead of representing how that type of equipment is supposed to act. However, in this case it is imperative to remember that the two stack tests that were presented only really represent an average of 3 specific hours of operation in each case. This plant is required to have an SO2 CEMS on the tail gas incinerator stack, and this monitor has been (and is continually checked to maintain this) RATA certified under the Part 75 requirements. This monitor data should be considered as an even more reliable measure of plant operation than the stack tests were. The most obvious reason being that the operation itself has variable emissions and the CEMS data can show trends that the stack test data is not able to due to an extremely limited scope of time covered.

These results were obtained under certain operating conditions and therefore may not represent the potential to emit of the operation. However, the data is good for comparing coal and PET Coke as a feedstock and then extrapolating that comparison to the effect on potential to emit. Monthly data from 1997 through 1999 includes hours of operation for each month, the average SO2 emission rate in pounds per hour for the month, the standard deviation in the SO2 emission data, and the average ppm concentration of sulfur in the syngas being produced during the month. Some months the standard deviation is significantly above the average SO2 emission rate for the entire month. That is a very good indicator that the emission rates are in fact quite variable. Also of importance is the fact that the standard deviations have a downward trend from the early months of 1997 to the ending months of 1999. That is a strong indication that some of the variability is being reduced as the company gets more experience with the equipment and has better control of the entire process. Just as the standard deviations are dropping with time the average monthly emission rates are also dropping. Again that is probably attributable to a better understanding of the process and learning from experience. But, even though the process variability is being reduced, it is still significant and this suggests that taking the stack test results out of context is risky.

In order to more completely understand what the stack test results really mean some of the CEMS data that covers those time periods should be studied. The first of the two PET Coke trials occurred in November of 1997. This trial was the one requested by IDEM when the issue of utilizing it as an alternate fuel was first being discussed. The plant operated on PET Coke as the raw material from November 17th through November 27th. The highest day during the PET Coke trial was the first day they were on that raw material. They had an average emission rate of 125.17 pounds per hour for that day. The next highest was only 81.43 pounds per hour for the daily average. Of the 11 days during the month that coal was the raw material, 4 were above the highest PET Coke day and 6 (or over ½) were above the second highest daily average. The average of the 11 days on PET Coke was 43.64 pounds per hour which was well below the monthly average for November of 79.49 pounds per hour. The days when Pet Coke was the raw material being utilized, the emissions were lower compared to that of coal. The second PET Coke trial occurred in September of 1999. While Wabash River Energy is utilizing PET Coke as the raw material they have to increase their recirculation flow rates as well as the flow rate to the tail gas incinerator. This is because the syngas that is produced utilizing PET Coke as the raw material has a higher heating value per volume than the syngas produced from coal. This higher heating value per volume means that the volume (and mass) of syngas fed to the Combustion Turbine for any specific operation rate drops when they switch to PET Coke based syngas. As a result of this reduction in flow to the Combustion Turbine the SO2 emissions from syngas combustion can actually drop even when the sulfur concentration of the syngas remains the same. The highest flowrates through the tail gas incinerator occurred on the days when PET Coke was the feed stock, but those same three days also had the lowest total emission rates of SO2. The month of October 1998 was when the coal stack testing was performed. While the stack test data showed that the coal test had a higher emission rate than the PET Coke test did, that position is not supported when you try to make a broader comparison. The three daily averages on PET Coke in September of 1999 were 15.42, 22.41, and 28.08 pounds per hour respectively. The averages on the two days before and the day after were 12.10, 13.61, and 23.72 pounds per hour which would appear to be slightly lower. However, the total plant emissions during the time period are significantly lower on the PET Coke days. It should be noted that both the coal emission rates and the PET Coke emission rates from this time period are substantially lower than the rates were during the November of 1997 testing.

In conclusion, the addition of PET Coke and PET Coke/coal blends as allowable raw materials for this processing operation will not increase the total emissions from the plant. There might be a reduction even, but the data is not conclusive enough to support that at this time. If these two interpretations are correct then there would not be any change in potential emissions from the project and it could be covered in an Administrative Amendment as proposed.